AUTOMATED CANCER DETECTION (CAD) USING MRI

SUMMARY

The inventions listed are owned by an agency of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 209 and 37 CFR Part 404 to achieve expeditious commercialization of results of federally-funded research and development. Foreign patent applications are filed on selected inventions to extend market coverage for companies and may also be available for licensing.

REFERENCE NUMBER

E-228-2016

PRODUCT TYPE

- Devices
- Diagnostics

COLLABORATION OPPORTUNITY

This invention is available for licensing and co-development.

CONTACT

Ken Rose

CC - NIH Clinical Center

240-276-5509

Ken.Rose@nih.gov

DESCRIPTION OF TECHNOLOGY

Computer-aided diagnosis (CAD) may improve the accuracy, reproducibility, and standardization of multiparametric MRI. Better visualization and detection rates for prostate cancer have been shown using multiparametric MRI, but the process of examining and training to understand these images is difficult. This system, by creating a prediction map and drawing the radiologist's/reader's attention to possible cancerous regions identified in a tissue of interest, can assist in reading and diagnosis. The system uses T2-weighted MRI and high-b-value diffusion weighted imaging to detect discriminative texture features for cancer. Texture analysis and data mining generate and identify the most discriminative features for cancer detection on the prediction map. The system has been validated on a large dataset of over 200 patients for prostate cancer detection and system outperformed other combinations of MRI sequences. It might be used for other tissues and may be combined with other medical images (CT, ultrasound, X-ray. SPECT, PET).

POTENTIAL COMMERCIAL APPLICATIONS

- Medical imaging and cancer diagnosis

NCI Technology Transfer Center   https://techtransfer.cancer.gov/pdf/e-228-2016.pd
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- Surgical and/or therapeutic-planning and procedures
- Fusion guided biopsy and ablation treatments

COMPETITIVE ADVANTAGES

- Cancer prediction mapping, improved diagnosis and surgical planning.
- Improved MRI interpretation and availability.

INVENTOR(S)

Jin Tae Kwak (NIH-CC), Bradford J. Wood (NIH-CC), Sheng Xu (NIH-CC), Ronald M. Summers (NIH-CC), Baris Turkbey (NIH-NCI), Peter Choyke (NIH-NCI), Peter A. Pinto (NIH-NCI)

DEVELOPMENT STAGE

- Clinical

PUBLICATIONS

Kwak et al., Automated prostate cancer detection using T2-weighted and high-b-value diffusion weighted magnetic resonance imaging, Medical Physics 42, 2368 (2015); doi: 10.1118/1.49183181

PATENT STATUS

- **U.S. Filed:** US Patent Application No. 14/971,296 filed December 16, 2015

THERAPEUTIC AREA

- Cancer/Neoplasm